EPA Proposes Plan to Clean Up Two Creeks

Nease Chemical Site
Columbiana County, Ohio July 2008

Share your opinions

EPA invites you to participate in the cleanup process at the Nease Chemical site. Your input helps EPA determine the best course of action. If you are interested in the site cleanup, please attend a public meeting at 6:30 p.m., Thursday, July 31, 2008, at the Salem Public Library, 821 E. State St.

A comment period has been set up to provide you an opportunity to share your comments on the site cleanup. Comments should be submitted from **July 14 to Aug. 13**:

- Orally or in writing at the public meeting.
- Via the Internet at www.epa.gov/region5/publiccomment/nease-pubcomment.htm.
- Fax to Susan Pastor at 312-353-1155.

Contact EPA

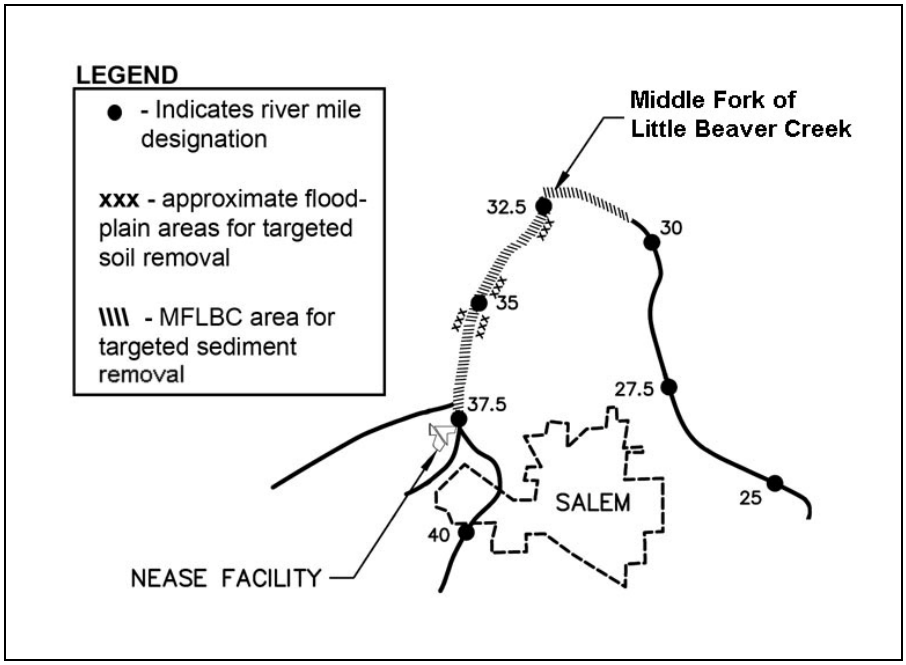
Susan Pastor
EPA Community Involvement Coordinator
312-353-1325
pastor.susan@epa.gov

Mary Logan
EPA Remedial Project Manager
312-886-4699
logan.mary@epa.gov

Call Region 5 toll-free,
800-621-8431,
10 a.m. - 5:30 p.m., weekdays.

Contact Ohio EPA

Sheila Abraham
Site Coordinator
330-963-1290
sheila.abraham@epa.state.oh.us



Area of the Nease Chemical site referred to as Operable Unit 3. (Feeder Creek and portions of the Middle Fork of Little Beaver Creek are not shown.)

A cleanup plan proposed by U.S. Environmental Protection Agency calls for mirex-contaminated soil and sediment to be removed from Feeder Creek and parts of the Middle Fork of Little Beaver Creek by excavation, mechanical dredging or hydraulic removal. Contaminated material will be moved to the old Nease Chemical plant site where it will be covered with clean soil, monitored and controlled. During the process, workers will take samples to ensure the cleanup meets goals EPA sets.

This is the second of two planned cleanup proposals for the site, and is being done in the area known as Operable Unit 3 (see map). The first cleanup plan addressed Operable Unit 2, which consisted of ground water, the old plant facility and soil.

Operable Unit 1 consisted of surface water and sediment control structures built on-site in the 1990s to prevent contaminant movement until the final cleanups are complete.

You have 30 days to file written comments on EPA's proposed plan. See the box at left to find out how. EPA could alter its proposed plan or even choose a new one based on public comments[1].

[1] *Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires publication of a notice and a proposed plan for the site remediation. The proposed plan must also be made available to the public for comment. This proposed plan is a summary of information contained in the remedial investigation, feasibility study, and other documents in the administrative record for the Nease Chemical site. Please consult those documents for more detailed information.*

About the Nease site

The old Nease Chemical plant consists of 44 acres along state Route 14, 2½ miles northwest of Salem on the Columbiana-Mahoning county line. The Nease plant is surrounded by lightly developed land on three sides and an industrial plant on the east. The area is partially fenced to prevent access. Railroad tracks intersect the northern portion of the old plant site near the fence.

Most of the Nease plant is overgrown. Trees border the eastern and western sides of the fenced area. The land just north of the fence is swampy, with a small stream called Feeder Creek running through it. Feeder Creek empties into the Middle Fork of Little Beaver Creek, northeast of the old plant site. The Superfund site includes Feeder Creek and parts of the Middle Fork of Little Beaver Creek, which flows for about 40 river miles, first north and then to the southeast. Scientists measure distance in creeks by "river miles." A river mile is the same length as a mile, but the distance accounts for all the twists and turns in the creek.

Nease Chemical used unlined ponds to treat waste from its manufacturing process. Over the years, the ponds were filled in with waste and soil. What was once a pond is now a boggy area. Contaminants seeped into the soil and ground water from these ponds, as well as from buried drums that eventually leaked. The leaky drums were dug up and taken off-site. The primary contaminants in the soil, ponds and ground water are mirex and volatile organic compounds, known as VOCs (chemicals that evaporate or dissolve into water easily). These areas are included in the cleanup of Operable Unit 2.

Runoff from the waste treatment ponds and nearby soil flowed into Feeder Creek, which runs through the site, moving mirex contamination into the Middle Fork of Little Beaver Creek. Once it got into the creeks, some mirex washed up onto soil in low-lying areas, called floodplains. These areas are included in the cleanup of Operable Unit 3. The Nease site investigations evaluated the entire 40 river miles of the Middle Fork of Little Beaver Creek, but most work was done near the Nease plant, where the highest levels of mirex are found.

In 1977, Rutgers Organics Corp. acquired the Nease property but never operated at the site. In 1983, the site was placed on EPA's Superfund list, also referred to as the National Priorities List. Since then, Rutgers – with oversight from EPA and Ohio EPA – has studied the type and extent of contamination and is working on the cleanup of Operable Unit 2.

Upstream (west) view at the bridge that carries U.S. Highway 62 (Salem-Youngstown Road) over the Middle Fork of Little Beaver Creek at river mile 30.1.

Operable Unit 2 cleanup

Planning and work are under way on Operable Unit 2, where two cleanup procedures are being used. One is an innovative process that uses microscopic bits of iron called "nanoparticles" to react with chemicals in the polluted underground water and turn them into harmless byproducts. The long name for this technology is "nanoscale zero-valent iron." Injections of iron were tested in late 2006. Also, ground water is being pumped above ground and treated to remove contaminants. Over 23 million gallons of water have been treated so far.

The other cleanup process is called stripping/ stabilization/solidification. Workers will use a tiller-like machine to burrow into the polluted sludge of two drained ponds and inject air. The tiller action and forced air pushes chemicals to the surface to be treated. A cement-like substance is mixed into the former ponds to prevent any remaining pollutants from moving.

The cleanup of Operable Unit 2 is expected to be completed by 2011.

Summary of Operable Unit 3 site risks

The main contaminant found in Operable Unit 3 is mirex. Between 1961 and 1973, Nease Chemical produced various fire retardants and pesticides – some of which contained mirex. Banned in the United States in 1978, mirex breaks down slowly in the environment. It remains in soil and sediment for years. Mirex built up in fish in the Middle Fork of Little Beaver Creek. The state of Ohio recommends that people limit eating carp caught in the creek between Allen Road and state Route 14. (See www.epa.state.oh.us/dsw/fishadvisory/waters/ Middle.html) Mirex in floodplain soil also built up in milk and meat of cattle grazing in the floodplains in the late 1980s. After fences were built to keep the cattle out, mirex was no longer found in the cattle.

A document called an "endangerment assessment" considers what risk to people or the environment would be if the site is not cleaned up. There are no current risks to people living near or playing in the Middle Fork of Little Beaver Creek. In the future, people could be at risk if they don't follow Ohio's recommended fishing advisories. They could also be at risk if they drink milk or eat meat from cattle that are allowed to graze on the floodplains. The effect of mirex on people's health from environmental contamination is not certain, but future health risks could include an increased risk of cancer and other diseases, mainly from prolonged exposure. Small animals living in the floodplain soil or eating the fish might be exposed to the contaminants. Cleanup goals for sediment and floodplain soil set by EPA will protect against these potential risks.

Recommended cleanup alternatives

EPA considered three alternatives for managing and cleaning up the contaminated floodplain soil and sediment in Operable Unit 3 and evaluated each against nine criteria required by law (see box on Page 5 for an explanation of the criteria). They have not yet been evaluated for state and community acceptance because these criteria are typically judged after EPA proposes a cleanup plan and holds a public comment period. The two active alternatives presented here provide the best balance of the nine criteria and meet the requirements of federal law. They protect public health and the environment over the long term, comply with state and local regulations and are cost-effective. Full details of the site investigation work and alternatives to address the soil and sediment contamination are provided in site documents, including the feasibility study report, on EPA's Web site and at the two information repositories (see the back page for locations).

Here are summaries of the three options:

Alternative A – No further action: Nothing would be done to clean up the contamination. However, the sediment control structures currently in place on Feeder Creek would be maintained for 30 years. EPA is required to include a no-action option for comparison purposes. **Cost: $360,000**

Alternative B – Monitored natural recovery of the Middle Fork of Little Beaver Creek sediment, excavation and backfilling of floodplain surface soil and removal of Feeder Creek sediment: Natural recovery allows the Middle Fork of Little Beaver Creek to recover as contaminants break down over time. How long that would take depends on how much mirex is in the sediment. Runoff of additional mirex from the plant site must be prevented for natural recovery to work. One method of monitoring the creek's recovery is collecting fish from the creek and analyzing them for mirex. Another method is to collect and analyze sediment samples collected at specific spots along the river. To ensure natural recovery is working, monitoring would also be done at additional upstream and downstream locations in the Middle Fork of Little Beaver Creek.

In floodplain areas where contamination is the highest, the top few inches of soil would be removed and replaced with clean soil. Studies show that at least four areas, with a combined size of approximately 6½ acres would need to be cleaned up.

Chart comparing cleanup alternatives with nine Superfund criteria

Evaluation Criteria	Alternative A	Alternative B	Alternative C
Overall Protection of Human Health and the Environment	□	■	■
Compliance with ARARs	■	■	■
Long-Term Effectiveness and Permanence	□	◘	■
Reduction of Toxicity, Mobility, or Volume through Treatment	□	□	□
Short-Term Effectiveness	□	◘	■
Implementability	■	■	■
Cost	$360,000	$2.2 million	$3.8 million
State Acceptance	Will be evaluated after the comment period.		
Community Acceptance	Will be evaluated after the comment period.		

■= Meets Criteria □ = Does Not Meet Criteria ◘= Partially Meets Criteria

Before the cleanup starts, additional studies will determine the exact areas that need to be removed. To minimize habitat destruction in the area, workers would make an effort to avoid erosion or a change in the flow of the stream, and the most contaminated soil would be moved to the old Nease plant where it would be placed with other contaminated soil, covered with clean soil, monitored and controlled.

The last part of this option is to remove the sediment contaminated with mirex in Feeder Creek. Up to 2 feet of sediment would be removed along the entire creek to prevent any more mirex from moving into the Middle Fork of Little Beaver Creek. Water flow from Feeder Creek would be redirected during cleanup work. After the sediment is removed, workers would take samples to confirm removal of the mirex contamination. Clean soil and rocks may be placed over the bottom of Feeder Creek to cover remaining sediment with low levels of contamination. Included in the cost estimate is 30 years of annual site inspections and maintenance of Feeder Creek. **Cost: $2.2 million.**

Alternative C – Targeted removal of Middle Fork of Little Beaver Creek sediment, excavation and backfilling of floodplain surface soil and removal of Feeder Creek sediment *(EPA recommends this alternative)*: Based on previous sampling, the most contaminated sediment in the Middle Fork of Little Beaver Creek within 6½ river miles downstream of the Nease plant will be removed by mechanical or hydraulic dredging. Mechanical dredging uses construction equipment such as backhoes or clamshells to scoop out the contaminated sediment. Hydraulic dredging uses suction equipment to capture the sediment. The contaminated sediment will be moved to the old Nease plant where it will be dried out and placed with other contaminated soil, covered with clean soil, monitored and controlled.

To confirm that the mirex cleanup goal is met, workers will take sediment samples and conduct long-term fish tissue sampling. Before the cleanup starts, additional studies will determine the exact sediment areas that need to be removed so habitat destruction is minimized. In some areas, clean sediment may be placed back in the creek to speed up recovery of the ecosystem.

The removal of floodplain soil and Feeder Creek sediment will be handled as in Alternative B. Included in the cost estimate is 30 years of annual site inspections and maintenance of Feeder Creek. **Cost: $3.8 million.**

Evaluation of alternatives

EPA concluded the "no-action" alternative would not protect people or the environment and it was eliminated from consideration. EPA recommends Alternative C because it provides the best long-term cleanup solution and best protection of people and the environment. The only difference between Alternatives B and C is the cleanup approach for contaminated sediment in the Middle Fork of Little Beaver Creek. In Alternative C, the highly contaminated soil and sediment will be removed from portions of the Middle Fork of Little Beaver Creek to ensure that EPA's cleanup goals are met. Alternative B proposes monitored natural recovery instead of removal.

Both Alternatives B and C would provide future protection of people and the environment. However, it will take much longer to meet cleanup goals through natural recovery of the Middle Fork of Little Beaver Creek in Alternative B. Alternative C provides for a more timely option because the most contaminated sediment in the Middle Fork of Little Beaver Creek will be removed from specific locations.

Alternatives B and C would provide a high degree of long-term protection from mirex contamination for Feeder Creek sediment and floodplain soil. Both would remove floodplain soil to quickly meet the cleanup goal and would also remove Feeder Creek sediment to prevent further movement of contaminants. Alternative C would provide the greatest reduction in volume because it calls for removing more of the mirex-contaminated sediment.

In general, both alternatives are easily implemented since the technologies and skills are available.

Next steps

Before it makes its decision final, EPA will review comments received during the public comment period and at the public meeting. Based on new information presented in the comments, EPA may modify its proposed plan or select another of the options outlined in this fact sheet. EPA encourages you to review and comment on the proposed cleanup plan. Much more detail on the cleanup options is available in the official documents and on file at the information repositories (listed on the back page) or EPA's Web site.

EPA will respond to the comments in a document called a "responsiveness summary." This will be part of another document called the "record of decision" that describes the final cleanup plan. The Agency will announce the selected cleanup plan in a local newspaper and will place a copy in the information repositories and post it on EPA's Web site.

Evaluation criteria

EPA uses nine criteria to compare cleanup options:

1. **Overall protection of human health and the environment** addresses whether an alternative adequately protects both human health and the environment. The cleanup plan can meet this criterion by reducing or eliminating contaminants or by reducing exposures to them.
2. **Compliance with applicable or relevant and appropriate requirements** assures that each project complies with federal, state and local laws and regulations.
3. **Long-term effectiveness and permanence** evaluates how well an option will work in the long term, including how safely remaining contaminants can be managed.
4. **Reduction of toxicity, mobility or volume through treatment** addresses how well the option reduces the toxicity (the chemical makeup of a contaminant that makes it dangerous), movement and amount of contaminants.
5. **Short-term effectiveness** is how quickly the project achieves protection, as well as its potential to be harmful to human health and the environment while it's being constructed and operated.
6. **Implementability** evaluates the technical feasibility of the cleanup plan, and whether materials and services are available to carry out the project.
7. **Cost** includes estimated capital or startup costs, such as the cost of buildings, treatment systems and monitoring wells. The criterion also considers costs to implement the plan, and operate and maintain it over time. Examples include laboratory analysis and personnel to operate equipment.
8. **State acceptance** is whether the state environmental agency, in this case Ohio EPA, agrees or disagrees with EPA's recommended alternative.
9. **Community acceptance** evaluates how well the community near the site accepts the option. EPA evaluates community acceptance after it receives and evaluates public comments on its recommended alternative.

Upcoming Public Meeting about Nease Chemical Site Cleanup

Thursday, July 31
6:30 p.m.
Salem Public Library
821 E. State St.

At the meeting, EPA will explain the proposed plan and provide opportunities to ask questions and make oral comments. You may also submit written comments. If you need special accommodations for the meeting, contact Susan Pastor by Thursday, July 24. Her contact information is on Page 1.

Web site

Site information is also posted on the Internet at: www.epa.gov/region5/sites/nease

To comment electronically: www.epa.gov/region5/publiccomment/nease-pubcomment.htm

Information repositories

Site-related documents and files may be viewed at the following locations:

Lepper Library
303 E. Lincoln Way
Lisbon

Salem Public Library
821 E. State St.
Salem

An administrative record, which contains detailed information that will be used in the selection of the cleanup plan, is also located at the Salem Public Library and at EPA's Chicago office.

EPA
United States
Environmental Protection
Agency

Region 5
Superfund Division (P-19J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590

NEASE CHEMICAL SITE:
EPA Proposes Plan to Clean Up Two Creeks

Comment Sheet

U.S. Environmental Protection Agency is interested in your comments on the proposed cleanup plan for the Nease Chemical site. EPA will consider public comments before selecting a final cleanup for the site. Please use the space below to write your comments, then fold and mail this form. Comments must be postmarked by **Aug. 13**. If you have any questions, please contact Susan Pastor at 312-353-1325 or through EPA's toll-free number at 800-621-8431. This comment sheet may also be faxed to her at 312-353-1155. Those with electronic capabilities may submit their comments via the Internet at www.epa.gov/region5/publiccomment/nease-pubcomment.htm.

Name: _____

Affiliation: _____

Address: _____

City: _____

State: _____ Zip: _____

NEASE CHEMICAL SITE
PUBLIC COMMENT SHEET

Detach this page, fold on dashed lines, staple, stamp, and mail

Name _____
Address _____
City _____
State _____ Zip _____

Susan Pastor
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Chicago, IL 60604-3590